



Appellant's Brief Under 37 C.F.R. § 1.192(c)
Application No. 09/455,574
Reply to Final Rejection dated February 2, 2004
Paper Dated: August 4, 2004
Attorney Docket No. 3749-991620

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No. : 09/455,574
Applicant : Aalbertus Pieter Kroesbergen
Filed : December 6, 1999
Title : SUBSTRATE WITH SUPER-ABSORBENT
MATERIAL, METHOD FOR MANUFACTURE
THEREOF AND USE
Group Art Unit : 1725
Examiner : Jonathan J. Johnson
Confirmation No. : 5330
Customer No. : 28289

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APPEAL BRIEF

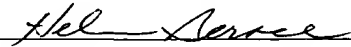
Sir:

This Appeal Brief is submitted in support of the Notice of Appeal filed on April 30, 2004 and received at the Patent Office on May 4, 2004. The Notice of Appeal appeals the final rejection of claims 35, 36, 38-50 and 61-64.

The headings used hereinafter and the subject matter set forth under each heading are in accordance with 37 C.F.R. § 1.192(c).

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to Mail Stop Appeal Brief - Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on August 4, 2004.

Helen Gerace
(Name of Person Mailing Paper)

 August 4, 2004
Signature Date

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I. REAL PARTY IN INTEREST

Stockhausen GmbH & Co. KG is the Assignee of the entire right, title, and interest to the above-identified application and, as such, is the real party in interest in this Appeal.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to the Appellant, the Appellant's legal representative, or the Assignee of the above-identified application which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending Appeal.

III. STATUS OF CLAIMS

Claims 37 and 51-60 have been canceled.

Claims 35, 36, 38, 39, 41-50 and 61-64 are pending and are appealed.

Claims 35, 36, 39, 41-45 and 47-49 stand finally rejected under 35 U.S.C. § 103(b) for anticipation by, or in the alternative, under 35 U.S.C. § 103(a) for obviousness over U. S. Patent No. 4,076,663 to Masuda et al. (hereinafter "the Masuda patent").

Claims 35, 36, 38, 39, 41-45 and 47-49 stand finally rejected under 35 U.S.C. § 102(b) for anticipation by or, in the alternative, under 35 U.S.C. § 103(a) for obviousness over U. S. Patent No. 4,154,898 to Burkholder, Jr. (hereinafter "the Burkholder patent") or U. S. Patent No. 4,017,653 to Gross (hereinafter "the Gross patent").

Claim 50 stands finally rejected under 35 U.S.C. § 103(a) for obviousness over the Burkholder patent or the Gross patent.

Claims 46 and 61 stand finally rejected under 35 U.S.C. § 103(a) for obviousness over the Masuda patent, the Burkholder patent or the Gross patent in view of U.S. Patent No. 5,246,770 to Bottiglione et al. (hereinafter "the Bottiglione patent").

Claims 62 and 63 stand finally rejected under 35 U.S.C. § 103(a) for obviousness over the Masuda patent, the Burkholder patent, or the Gross patent in view of U. S. Patent No. 5,275,884 to Nishino et al. (hereinafter "the Nishino patent").

Claim 64 stands finally rejected under 35 U.S.C. § 103(a) for obviousness over the Masuda patent, the Burkholder patent, or the Gross patent in view of U. S. Patent No. 4,321,997 to Miller (hereinafter "the Miller patent").

Claims 40 and 41 stand objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 35, 36, 38-50 and 61-64 are reproduced in Appendix A which is attached hereto.

IV. STATUS OF AMENDMENTS

No response after the final Office Action of February 2, 2004 has been submitted in this case. There were no claim changes after the final Office Action of February 2, 2004. The claims on appeal are the claims as amended by the Amendment of February 12, 2003, which are finally rejected in the final Office Action of February 2, 2004.

V. SUMMARY OF THE INVENTION

The claims on appeal in the present application are directed to a substrate comprising a super-absorbent material applied to the substrate, wherein the super-absorbent material is obtained by allowing suitable monomers to polymerize in the presence of a catalyst in order to obtain a pre-cross-linked polymer solution. Next, a cross-linking agent containing two functional groups which are capable, after thermal excitation, of reacting within at least ten minutes with carboxylate or carbonic acid functional groups is added to the polymer solution to obtain a pasty composition. Finally, the pasty composition is subsequently applied on or in the substrate in the form of discrete, substantially semi-spherical islets having a diameter of 10 μ to 1,000 μ and allowed to dry for one to three minutes at between 150°C and 200°C to form a swellable paste (see claim 35). Other additives, which are described on pages 3 and 4 of the present specification, can be introduced into the composition just before, simultaneously with, or after addition of the cross-linking agent. These additives can be used, for example, to change the viscosity of the composition, to improve the adhesion of the material to the substrate and/or to soften the super-absorbent material.

As discussed in the present application at pages 6 and 7, the absorbent capacity of the substrate not only depends on the quantity of super-absorbent material applied, but also on the form in which the super-absorbent material is applied to the substrate. It has been found that a pasty composition applied to the substrate in the form of discrete, substantially semi-spherical islets having a diameter between $10\ \mu$ and $1,000\ \mu$ results in a substantially higher absorbent capacity of the substrate. In a first Declaration of Dr. Harald R. Schmidt dated January 10, 2003 (Attached as Exhibit B), test data was obtained on a substrate wherein absorbent material was applied to the substrate in a regular pattern of islets having a diameter of $250\ \mu$ as described in Example 1 (page 2). A swelling height of 1 mm was obtained which corresponds to the absorbent capacity of the substrate, which is the same value disclosed on page 7, lines 15-17 of the present specification. The first Declaration also compares the absorbency of a substrate having a full surface coated layer (i.e., no discrete particles) and a substrate having a regular pattern of islets with a diameter of about $1,300\ \mu$, both of which fall outside the claimed $10\ \mu$ to $1000\ \mu$ islet range. The substrate with the full surface coated layer (i.e., Comparison Example 1) resulted in a swelling height of only 0.2 mm. The substrate with islets having a diameter of about $1,300\ \mu$ (i.e., Comparison Example 2) similarly resulted in a swelling height of only 0.25 mm.

In a second Declaration of Dr. Harald R. Schmidt dated November 24, 2003 (Attached as Exhibit C), additional test data was obtained on substrates wherein absorbent material was applied to each of the substrates in a regular pattern of islets using a screen having a mesh width of $550\ \mu$ and $355\ \mu$, respectively, which corresponds to a substrate with islets having a diameter of $550\ \mu$ and at least $350\ \mu$, respectively. The substrate with the islets having a diameter of $350\ \mu$ resulted in a swelling height of 0.44 mm and the substrate with the islets having a diameter of $550\ \mu$ resulted in a swelling height of 0.60 mm. The Declarations thus corroborate that substrates having a layer of islets within the diameter range of $10\ \mu$ to $1000\ \mu$ according to the claims demonstrate new and unexpectedly good results compared to substrates having a layer of islets outside the diameter range of $10\ \mu$ to $1000\ \mu$. As illustrated in the attached graph entitled "Absorbency Data," prepared by the undersigned, the curve of the available data illustrates the new and unexpected swelling height results throughout the claimed range of $10\ \mu$ to $1,000\ \mu$.

VI. ISSUES PRESENTED

The following issues are presented in this Appeal:

- a) Are claims 35, 36, 39, 41-45 and 47-49 anticipated by the Masuda patent?
- b) Are claims 35, 36, 39, 41-45 and 47-49 directed toward obvious subject matter in light of the Masuda patent?
- c) Are claims 35, 36, 38, 39, 41-45 and 47-49 anticipated by the Burkholder patent or the Gross patent?
- d) Are claims 35, 36, 38, 39, 41-45 and 47-49 directed toward obvious subject matter in light of the Burkholder patent or the Gross patent?
- e) Is claim 50 directed towards obvious subject matter in light of the Burkholder patent or the Gross patent?
- f) Are claims 46 and 61 directed toward obvious subject matter in light of the Masuda patent, the Burkholder patent or the Gross patent in view of the Bottiglione patent?
- g) Are claims 62 and 63 directed toward obvious subject matter in light of the Masuda patent, the Burkholder patent or the Gross patent in view of the Nishino patent?
- h) Is claim 64 directed towards obvious subject matter in light of the Masuda patent, the Burkholder patent, or the Gross patent in view of the Miller patent?

VII. GROUPING OF CLAIMS

Claims 35, 36, 38, 39, 41-50 and 61-64 stand or fall together.

VIII. ARGUMENTS

Each issue presented for review is addressed hereinafter under the appropriate heading:

1. 35 U.S.C. § 112, first paragraph
None.
2. 35 U.S.C. § 112, second paragraph
None.
3. 35 U.S.C. § 102(b)/103(a)

a. Rejections over the Masuda patent

Claims 35, 36, 39, 41-45 and 47-49 stand rejected under 35 U.S.C. § 102(b) for anticipation by or, in the alternative, under 35 U.S.C. § 103(a) for obviousness over the Masuda patent for the reasons discussed on pages 2-5 of the final Office Action. For the reasons discussed below, Appellant respectfully traverses the Examiner's rejection of the claims.

Independent claim 35 is directed to a substrate comprising a super-absorbent material applied to a substrate, wherein the super-absorbent material is obtained by allowing suitable monomers to polymerize in the presence of the catalyst in order to obtain a pre-cross-linked polymer solution. Next, a cross-linking agent containing two functional groups which are capable, after thermal excitation, of reacting within at least ten minutes of carboxylic or carbonic acid functional groups is added to the polymer solution to obtain a pasty composition. Finally, the pasty composition is subsequently applied on or in the substrate in the form of discrete, substantially semi-spherical islet having a diameter of 10 μ to 1,000 μ and allowed to dry for one to three minutes at between 150°C and 200°C to form a swellable paste. Claim 36 is directed to a substrate comprising a super-absorbent material applied to the substrate, wherein the material has a significantly enlarged surface area achieved by having the super-absorbent material in the form of a plurality of discrete, substantially semi-spherical islet having a diameter of 10 μ to 1,000 μ .

The Masuda patent describes a highly water-absorbent resin produced by polymerizing cellulose with another monomer in the presence of a cross-linking agent and, optionally, adding a catalyst. The water-absorbent resin can be applied to various substrates by any known method, such as immersing (i.e., full surface coated layer) the substrate into an aqueous solution of the resin and subsequently dried. See column 6, lines 3-17. The Masuda patent discloses only a substrate having a full surface coated layer of absorbent material.

Regarding the anticipation rejection, the rejection of claims 35, 36, 39, 41-45 and 47-49 are traversed on the grounds that the cited prior art reference fails to teach all of the limitations of the claims. The Masuda patent does not teach or suggest a substrate having super-absorbent material in the form of discrete, substantially semi-spherical islets having a diameter of 10 μ to 1,000 μ . The Examiner has also acknowledged that the Masuda patent does not specifically teach this limitation (pages 2 and 3 of the final Office Action). Because the Masuda patent does not teach each and every element in claim 35 or claim 36, the Appellant has met his burden under 35 U.S.C. § 102. MPEP 2131.

To rebut a *prima facie* case of obviousness, an applicant must produce evidence of nonobviousness. This evidence, which can be submitted in the form of a Declaration under 37 C.F.R. § 1.132, can include comparative test data showing that the claimed invention possesses unexpectedly improved properties or properties that the prior art does not have. In re Hedges, 783 F.2d 1038, 1041, 228 U.S.P.Q. 685, 687 (Fed. Cir. 1986).

Regarding the obviousness rejection, the Examiner asserts that the substrate described in the Masuda patent is identical to the substrate of the present invention, except for the substrate having super-absorbent material in the form of discrete, substantially semi-spherical islets having a diameter of 10 μ to 1,000 μ . Therefore, the Examiner contends that it would have been obvious to optimize the shape and size of the super-absorbent material to obtain a substrate having predetermined absorbency properties. As discussed below, Appellant respectfully traverses the obviousness rejection of claims 35, 36, 39, 41-45 and 47-49 on the grounds that the claimed invention possesses unexpectedly improved absorbency properties that the prior art does not have.

A substrate having a full surface coated layer, as described in the Masuda patent, was tested for absorbency in Comparison Example 2 of the first Declaration. The results indicate that a full surface coated layer has a substantially lower swelling height (i.e., 0.2 mm) in contrast to the swelling height (i.e., 0.44 mm, 0.60 mm, and 1 mm) of the substrates having the regular pattern of islets with a diameter of between 10 μ and 1,000 μ . The motivation to optimize the shape and size of the absorbent surface coated layer cannot come from Applicant's specification. Therefore, there is no motivation, suggestion, or reasonable expectation of success to modify the surface coated layer in the Masuda patent

and arrive at the new and unexpected results of a substrate having at least two times the absorbent capacity.

In view of the foregoing, Appellant believes that independent claims 35 and 36 are patentable over the Masuda patent and are in condition for allowance.

Because claims 39, 41-45 and 47-49 depend either directly or indirectly from independent claim 35, claims 39, 41-45 and 47-49 are also believed to be patentable over the Masuda patent for the reasons discussed above in connection with claim 35.

b. Rejections over the Burkholder patent or the Gross patent

Claims 35, 36, 38, 39, 41-45 and 47-49 stand rejected under 35 U.S.C. § 102(b) for anticipation by, or in the alternative, under 35 U.S.C. § 103(a) for obviousness over the Burkholder patent or the Gross patent for the reasons discussed on pages 5 and 6 of the final Office Action. For the reasons discussed below, Appellant respectfully traverses the Examiner's rejection of the claims.

The Burkholder and Gross patents are very similar to each other. The Burkholder patent describes water-soluble absorbent articles made from crosslinking carboxylic polymers, wherein the polymers are at least partially crosslinked and are then coated on a surface. The Gross patent describes a use of water-swellaable absorbent articles made from crosslinked or cured polymer, wherein the crosslinking agent is added to a polymer solution and the solution is subsequently coated onto a surface and crosslinked further. Both the Burkholder and Gross patents describe a coating step that can be a complete coating (i.e., full surface coated layer) or a discontinuous coating. A discontinuous coating includes, for example, applying the composition to a substrate in a pattern of large dots, squares, or grid lines to retain the inherent flexibility of the fibrous substrate and, at the same time, vastly improving its water absorbency (see column 3, lines 5-17 of Burkholder and column 4, lines 17-30 of Gross).

Regarding the anticipation rejection, the rejection of claims 35, 36, 38, 39, 41-45 and 47-49 are traversed on the grounds that the cited prior art reference fails to teach all of the limitations of the claims. The Burkholder patent and the Gross patent do not teach or suggest a substrate having super-absorbent material in the form of discrete, substantially semi-spherical islets having a diameter of 10 μ to 1,000 μ . The Examiner has also

acknowledged that the Burkholder patent and the Gross patent do not specifically teach this limitation (page 5 of the final Office Action). Because these patents do not teach each and every element in claim 35 or claim 36, Appellant has met his burden under 35 U.S.C. § 102. MPEP 2131.

Regarding the obviousness rejection, the Examiner asserts that the substrate described in the Burkholder patent and the Gross patent are identical to the substrate of the present invention, except for the substrate having super-absorbent material in the form of discrete, substantially semi-spherical islets having a diameter of 10 μ to 1,000 μ . Therefore, the Examiner contends that it would have been obvious to optimize the shape and size of the super-absorbent material to obtain a substrate having predetermined absorbency properties. As discussed below, Appellant respectfully traverses the obviousness rejection of claims 35, 36, 38, 39, 41-45 and 47-49 on the grounds that the claimed invention possesses unexpectedly improved absorbency properties that the prior art does not have.

The Burkholder patent and the Gross patent disclose applying an absorbent composition to a substrate in a pattern of large dots, squares, or grid lines. By the use of the adjective "large" before the terms dots, squares, or grid lines, the Burkholder and Gross patents teach away from the use of screens having mesh sizes in the micron range for applying small diameter patterns of absorbent material to a substrate. Because of the vast number of screens available in the marketplace, it would not have been obvious to use controlled profile screen films having a mesh size in a range of 10 μ to 1,000 μ (i.e., CP 30, 40, 46 screens), which are generally used for high definition transfer printing, on a substrate to improve its absorbency absent hindsight reconstruction. Furthermore, the Burkholder patent and the Gross patent teach that as the size and/or diameter of a discontinuous coating pattern increases, the absorbent capacity of a substrate vastly improves versus a substrate having full surface coated layer. This teaching is contrary to the results identified in the present specification and illustrated in the Comparison Examples 1 and 2 of the accompanying first Declaration, in which the continuous coating and the 1,300 μ islets (i.e., swelling height of 0.25 mm) are shown to provide inferior absorbency compared to the claimed 10 μ to 1,000 μ islets. One skilled in the art could not have learned the benefits associated with the 10 μ to 1,000 μ islets absent consulting the present specification, and the

obviousness rejection of claims 35 and 36, and any claim dependent thereon may, thus, be seen to be in condition for allowance.

In view of the foregoing, Appellant believes that independent claims 35 and 36 are patentable over the Burkholder patent and the Gross patent and are in condition for allowance.

Because claims 38, 39, 41-45 and 47-49 depend either directly or indirectly from claim 35, claims 38, 39, 41-45 and 47-49 are also believed patentable over the Burkholder patent and the Gross patent for the same reasons discussed above in connection with independent claim 35.

Claim 50

Claim 50 stands rejected under 35 U.S.C. § 103(a) for obviousness over the Burkholder patent or the Gross patent. Because claim 50 depends directly from independent claim 35, claim 50 is believed to be patentable over the teachings of the Burkholder patent and the Gross patent for the same reasons discussed above in connection with independent claim 35.

c. Rejections over the Masuda patent, the Burkholder patent or the Gross patent in view of the Bottiglione patent

Claims 46 and 61 stand rejected under 35 U.S.C. § 103(a) for obviousness over the Masuda patent, the Burkholder patent or the Gross patent in view of the Bottiglione patent. The Examiner asserts the Bottiglione patent for the teaching of adding soot to the composition to make it conductive. Because claims 46 and 61 depend directly from claim 35, claims 46 and 61 are also believed to be patentable over the combined teachings of the Masuda patent, the Burkholder patent or the Gross patent and the Bottiglione patent for the same reasons discussed above in connection with independent claim 35.

d. Rejections over the Masuda patent, the Burkholder patent or the Gross patent in view of the Nishino patent

Claims 62 and 63 stand rejected under 35 U.S.C. § 103(a) for obviousness over the Masuda patent, the Burkholder patent or the Gross patent in view of the Nishino

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patent. The Examiner asserts the Nishino patent teaches an absorbent product used in a baby diaper and packaging material. Because claims 62 and 63 depend directly from claim 35, claims 62 and 63 are also believed to be patentable over the combined teachings of the Masuda patent, the Burkholder patent or the Gross patent and the Masuda patent for the same reasons discussed above in connection with independent claim 35.

e. Rejections over the Masuda patent, the Burkholder patent or the Gross patent in view of the Miller patent

Claim 64 is rejected under 35 U.S.C. § 103(a) for obviousness over the Masuda patent, the Burkholder patent or the Gross patent in view of the Miller patent. The Examiner asserts Miller for teaching an agricultural substrate comprising an absorbent. Because claim 64 depends directly from claim 35, claim 64 is also believed to be patentable over the combined teachings of the Masuda patent, the Burkholder patent, the Gross patent and the Miller patent for the same reasons discussed above in connection with independent claim 35.

IX. CONCLUSION

The claims define a unique way of improving the absorbency of a substrate by applying super-absorbent material in the form of a plurality of discrete, substantially semi-spherical islets with a diameter between 10 μ and 1,000 μ . In regard to the rejected claims, none of the cited prior art teaches or suggests micron size patterns of absorbent material applied to a substrate to improve its absorbent capacity. The available absorbency data provides convincing evidence to corroborate the new and unexpected swelling height results throughout the claimed range of 10 μ to 1,000 μ . Therefore, reversal of all the Examiner's rejections and allowance of claims 35, 36, 38-50 and 61-64 are respectfully requested.

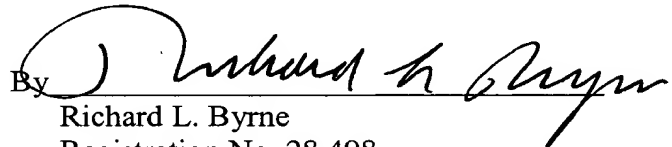
A check in the amount of \$440.00 is enclosed to cover the fee for filing the Appeal Brief (\$330.00) and the fee for an accompanying one-month Petition for Extension of Time (\$110.00).

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The Commissioner for Patents and Trademarks is hereby authorized to charge any additional fees which may be required to Deposit Account No. 23-0650. Please refund any overpayments to Deposit Account No. 23-0650. An original and two copies of this Appeal Brief are enclosed.

Respectfully submitted,

WEBB ZIESENHEIM LOGSDON
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APPENDIX A

35. (Previously Presented) A substrate comprising a super-absorbent material applied to the substrate, wherein the super-absorbent material is obtained by allowing suitable monomers to polymerize in the presence of a catalyst in order to obtain a pre-cross-linked polymer solution, adding a cross-linking agent containing two functional groups which are capable after thermal excitation of reacting within at least ten minutes with carboxylate or carbonic acid functional groups to the polymer solution to obtain a pasty composition, subsequently applying the composition on or in the substrate and allowing the applied composition to dry for one to three minutes at between 150°C and 200°C to form a swellable paste, and wherein the pasty composition is applied to the substrate in the form of discrete, substantially semi-spherical islets having a diameter of 10 μ to 1000 μ .

36. (Previously Presented) A substrate comprising a super-absorbent material applied to the substrate, wherein the material has a significantly enlarged surface area achieved by having the super-absorbent material in the form of a plurality of discrete, substantially semi-spherical islets with a diameter between 10 and 1000 μ .

38. (Previously Presented) The substrate as claimed in claim 35, wherein the super-absorbent material is a foam.

39. (Previously Presented) The substrate as claimed in claim 35, wherein the pasty composition applied to the substrate is allowed to dry and cross-link.

40. (Previously Presented) The substrate as claimed in claim 39, further comprising adding a foaming agent to the pasty composition prior to applying the composition to the substrate, wherein the composition is caused to foam at any time after addition of the foaming agent.

41. (Previously Presented) The substrate as claimed in claim 40, wherein the pasty composition further comprises at least one other additive chosen from agents for changing the viscosity of the composition, agents for improving the adhesion of the super-

absorbent material to the substrate, agents for softening the super-absorbent material, and agents for making the composition conductive.

42. (Previously Presented) The substrate as claimed in claim 41, wherein the agents for changing the viscosity of the composition are acrylates, polyurethane or combinations thereof.

43. (Previously Presented) The substrate as claimed in claim 41, wherein the agents for improving the adhesion of the super-absorbent material to the substrate are polyamide, polyethylene, ethylene vinyl acetate or combinations thereof.

44. (Previously Presented) The substrate as claimed in claim 41, wherein the agents for softening the super-absorbent material are plasticizers which co-polymerize in the polymer.

45. (Previously Presented) The substrate as claimed in claim 35, wherein the cross-linking agent contains two functional groups which are capable after thermal excitation of reacting in a short time with carboxylate or carbonic acid functional groups.

46. (Previously Presented) The substrate as claimed in claim 35, wherein the composition comprises soot to make the composition conductive.

47. (Previously Presented) The substrate as claimed in claim 35, wherein the super-absorbent material is obtainable by preparing a polymer solution by dissolving a polymer in an aqueous solvent, adding a cross-linking agent to the polymer solution to obtain a pasty composition, and applying the composition to the substrate.

48. (Previously Presented) The substrate as claimed in claim 35, wherein the super-absorbent material is selected from the group consisting of a cross-linked polyacrylate, a polyamide, or a combination thereof.

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49. (Previously Presented) The substrate as claimed in claim 35, wherein the substrate is one of a fabric, a non-woven, a paper, a film, aluminum tape, or a fiber.

50. (Previously Presented) The substrate as claimed in claim 35, wherein the pasty composition consists of 95-99.9% by weight of an aqueous solution of pre-cross-linked poly(meth)acrylic acid and 0.1-5% by weight of a cross-linking agent.

61. (Previously Presented) A cable comprising a sheathing material which is formed from the substrate as claimed in claim 35.

62. (Previously Presented) A hygiene product selected from the group consisting of a baby napkin, a sanitary towel, and an incontinence product, comprising the substrate as claimed in claim 35.

63. (Previously Presented) A packaging material comprising the substrate as claimed in claim 35.

64. (Previously Presented) An agricultural substrate comprising the substrate as claimed in claim 35.

Exhibit B

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: Aalbertus Pieter Kroesbergen et al.
Application NO.: 09/455,574
FILED: 12 June, 1999
FOR: SUBSTRATE WITH SUPER-ABSORBENT MATERIAL,
METHOD FOR MANUFACTURE THEREFORE AND USE

DECLARATION UNDER 37 C.F.R. § 1.132

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

I, Dr. Harald R. Schmidt, hereby declare as follows:

1. I am a citizen of Germany, residing at Hoteser Weg 48 in 47918 Tönisvorst.
2. I studied chemistry at the Universities of Darmstadt, Tübingen and Düsseldorf and received a degree in the field of organic chemistry in the year 1993.
3. Since 1993 I have been employed as a chemist in the field of superabsorbents and I am still working in this field for the company of Stockhausen GmbH & Co. KG, Krefeld, Germany.
4. The following tests were made under my supervision and control:

I. Test according to the US application No. 09/455,574

Example 1

The super-absorbent composition according to the US application No. 09/455,574 was prepared from two components. Component 1 consists of an aqueous solution of a pre-cross-linked polyacrylic acid, which was partially present in the form of its sodium salt.

Shortly before application to the substrate, component 2, ethylene glycol diglycidylether, in a quantity of 3% by weight, related to the total quantity of component 1, was added to component 1 and mixed homogeneously therewith for 10 minutes.

The mixture was applied to a polyester fabric by means of screen printing technique with a screen having a mesh width of 745μ in order to obtain a regular pattern of islets with a diameter of about 250μ . After printing, the substrate with the mixture thereon was dried at 190°C for 3 minutes in order to cause the cross-linking process to take place.

The thus obtained product had a swelling height of 1 mm at an application of 9 g/m^2 (dry) determined according to the below described method.

II. Tests according to the state of art

IIa. Comparison Example 1

The procedure of Example 1 was repeated with the exception that a full surface coated layer was produced.

The thus obtained product had a swelling height, determined as described below, of 0,20 mm at an application of 9 g/m^2 (dry).

IIb. Comparison Example 2

The procedure of Example 1 was repeated with the exception that a regular pattern of islets with a diameter of about 1300μ was produced by using an appropriate screen.

The thus obtained product had a swelling height, determined as described below, of 0,25 mm at an application of 9 g/m^2 (dry).

III. Measurement of swelling height

In order to measure the swelling height, a circular cut-out (50.9 cm^2) of the coated sheet material is placed in a plastic cup having an inner diameter of 80.5 mm and a height of 30 mm. A thin polyester nonwoven (thickness 0.05 mm) and then a circular punch having a diameter of 80 mm and a weight of 100 g are placed on this nonwoven. The punch is provided with 60 through bores each having a diameter of 2 mm. The height of the punch's upper edge is observed during measuring. 75 ml of deionized water is filled into the cup and the rise of the punch's upper edge is noted after 1 minute (double determination).

IV. Results

The absorbent capacity of the substrate provided with super-absorbent material can be determined by measuring of its swelling height, an important property in the case the products according to the US patent application No. 09/455,574 are used as sheating material for cables. From the comparison of the swelling heights one can realize that the substrates provided with super-absorbent material in form of islets having a diameter $< 1000\mu$ according to US patent application No. 09/455,574 have a surprisingly better absorbent capacity (swelling height) than the substrates provided with super-absorbent material in

form of a full surface coated layer (comparison example 1) or in form of dots having a diameter $> 1000\mu$ (comparison example 2).

All statements made herein of my own knowledge are true, and all statements made on information and belief are believed to be true, and further, these statements were made with the knowledge that willful false statements and the like, so made, are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the patent application or any patent issued thereon.

January 10, 2003
(Date)

Harald R. Schmidt
(Dr. Harald R. Schmidt)

Exhibit C

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: Aalbertus Pieter Kroesbergen et al.
Application NO.: 09/455,574
FILED: 12 June, 1999
FOR: SUBSTRATE WITH SUPER-ABSORBENT MATERIAL,
METHOD FOR MANUFACTURE THEREFORE AND USE

DECLARATION UNDER 37 C.F.R. § 1.132

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

I, Dr. Harald R. Schmidt, hereby declare as follows:

1. I am a citizen of Germany, residing at Hoteser Weg 48 in 47918 Tönisvorst.
2. I studied chemistry at the Universities of Darmstadt, Tübingen and Düsseldorf and received a degree in the field of organic chemistry in the year 1993.
3. Since 1993 I have been employed as a chemist in the field of superabsorbents and I am still working in this field for the company of Stockhausen GmbH & Co. KG, Krefeld, Germany.
4. The following tests were made under my supervision and control:

I. Additional tests with CP 40 and CP 46 screen according to the US application No. 09/455,574

In addition to the earlier tests that were carried out with a CP 30 screen having a mesh width of 745 μm , two more experiments using a CP 40 screen (mesh width $\sim 550 \mu\text{m}$) and a CP 46 screen (mesh width 345 μm) were performed.

The super-absorbent composition according to the US application No. 09/455,574 was prepared from two components. Component 1 consists of an aqueous solution of a pre-cross-linked polyacrylic acid, which was partially present in the form of its sodium salt.

Shortly before application to the substrate, component 2, ethylene glycol diglycidylether, in a quantity of 3% by weight, related to the total quantity of component 1, was added to component 1 and mixed homogeneously therewith for 10 minutes.

The mixture was applied to a polyester fabric by means of screen printing technique with a screen having a mesh width of

- a) $\sim 550 \mu\text{m}$ (CP 40 screen)
- b) $355 \mu\text{m}$ (CP 46 screen).

After printing, the substrate with the mixture thereon was dried at 190 °C for 3 minutes in order to cause the cross-linking process to take place.

The thus obtained products had a swelling height of

- a) 0,44 mm (CP 40)
- b) 0,60 mm (CP 46)

at an application of 6 g/m^2 (dry) determined according to the below described method.

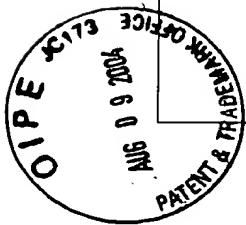
II. Measurement of swelling height

In order to measure the swelling height, a circular cut-out (50.9 cm^2) of the coated sheet material is placed in a plastic cup having an inner diameter of 80.5 mm and a height of 30 mm. A thin polyester nonwoven (thickness 0.05 mm) and then a circular punch having a diameter of 80 mm and a weight of 100 g are placed on this nonwoven. The punch is provided with 60 through bores each having a diameter of 2 mm. The height of the punch's upper edge is observed during measuring. 75 ml of deionized water is filled into the cup and the rise of the punch's upper edge is noted after 1 minute (double determination).

All statements made herein of my own knowledge are true, and all statements made on information and belief are believed to be true, and further, these statements were made with the knowledge that willful false statements and the like, so made, are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the patent application or any patent issued thereon.

November 24, 2003
(Date)

Harald R. Schmidt
(Dr. Harald R. Schmidt)



ABSORBENCY DATA

